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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,678	05/31/2001	Eugene I. Chong	19111.0038	7207

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EXAMINER	
PHAM, KHANH B	

ART UNIT	PAPER NUMBER
2177	6

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/867,678	CHONG ET AL.	
	Examiner	Art Unit	
	Khanh B. Pham	2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 4-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-14* is/are allowed.

6)☒ Claim(s) *1 and 4-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed January 28, 2004 has been entered. The specification has been amended. Claims have been 1, 5, 7-9 have been amended. Claims 2-3 have been canceled.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. **Claim 1-7 are rejected under 35 U.S.C. 101** because the claimed invention is directed to non-statutory subject matter.

- Claim 1 direct to "a mapping table in a memory of a computer", which is a nonfunctional descriptive material.
- Claim 5 directs to "a primary B+tree in a memory of a computer system", which is a nonfunctional descriptive material.
- Claim 7 directs to "an auxiliary structure for a primary B+tree in a memory of a computer system", which is a nonfunctional descriptive material

According to MPEP § 2106, "apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a

disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application". In this case, Claims 1, 5, 7 direct to a data structure stored in a memory but does not provide any useful functionality and therefore not patentable.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 4-8 are rejected** under 35 U.S.C. 102(b) as being anticipated by Knudsen (US 5,682,535 A), hereinafter referred to as "Knudsen".

As per claim 1, Knudsen teaches a mapping table for referencing rows of a primary B+tree, the mapping table comprising:

- "a row for each row of the primary B+tree" at Col. 68 lines 50-65 and Fig. 27.
- "wherein each row of the mapping table comprises a primary key value from the primary B+tree" at Col. 68 lines 50-65 and Fig. 27.
- "wherein the mapping table provides one-to-one mapping between primary keys of the primary B+tree structure and physical row identifiers of the mapping table" at .

As per claim 4, Knudsen teaches the mapping table according to claim 1, wherein "each row of the mapping table comprises a guess-DBA, database block address of a leaf block of the primary B+tree, where the corresponding primary B+tree row is likely to be found" at Col. 68 lines 50-65 and Fig. 27.

As per claim 5, Knudsen teaches a primary B+tree in a memory of a computer sytem, comprising: "mapping table row identifiers, each mapping table row identifier stored in a row of the primary B+tree, the mapping table row identifiers comprising a physical row identifier of a corresponding mapping table row" at Col. 68 lines 50-65 and Fig. 27.

As per claim 6, Knudsen teaches the primary B+tree according to claim 5, wherein "the mapping table row identifiers are stored at a fixed offset from a beginning of each row of the primary B+tree" at Col. 71 lines 10-40 and Fig. 28.

As per claim 7, Knudsen teaches an auxiliary structure for a primary B+tree in a memory of a computer, the auxiliary structure comprising: "row identifiers of corresponding mapping table rows, the row identifiers referring to a primary B+tree row" at Col. 68 lines 50-65 and Fig. 27.

As per claim 8, Knudsen teaches a method for loading/populating a primary B+tree in a memory of a computer having an associated mapping table, the method comprising:

- "generating a row of the mapping table for each row of the primary B+tree" at Col. 68 lines 50-65 ; and

- "storing in each row of the mapping table a row identifier for a corresponding row of the primary B+tree, the row identifier comprising a primary key column value for each row of the primary B+tree and a guess-DBA" at Col. 68 lines 50-65 and Fig. 27.

Allowable Subject Matter

7. Claims 9-14 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: Prior art of record does not teach the combination of claimed elements including the steps of: "computing a length of a mapping table row based upon a length of a primary key and an overhead of guess-DBA; utilizing the computed length to identify a mapping table block that can accommodate the row; reserving a slot in the identified mapping table block, wherein an address of the block and a reserved slot form a mapping table physical row identifier; utilizing a leaf block address of the primary B+tree row to construct a row of the mapping table; and inserting the mapping table row in the reserved slot" as recited in independent claim 9 nor "generating a row of a mapping table for each row of the primary B+tree" as recited in claims 13, 14. Claims 10-12 are also allowed by virtue of their dependencies from claim 9.

Response to Arguments

9. Applicant's arguments filed January 28, 2004 regarding claims 1-8 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

- Response to arguments regarding the 35 U.S.C 101 rejection

Claims 1-7, as amended, are directed to nonfunctional descriptive material (See section 3 above). According to MPEP § 2106, "apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application". In this case, Claims 1, 5, 7 direct to a data structure stored in a memory but does not provide any useful functionality and therefore not patentable.

- Response to arguments regarding the 102 rejection

Regarding claim 1, applicant argued that Knudsen (US 5,682,535) does not disclose or suggest "mapping table that provides one-to-one mapping between primary keys of the primary B+tree structure and physical row identifiers of the mapping table". On the contrary, at Fig. 27, Knudsen teaches a "primary key index" table (element 502), wherein each row of the primary key index comprises a primary key and a pointer to a "B+tree on primary key", and therefore provide "one-to-one mapping" as claimed.

Regarding claim 4, applicant argued that Knudsen does not disclose or suggest "a guess-DBA, database block address of a leaf block of the primary B+tree, where the corresponding primary B+tree row is likely to be found". On the contrary, Knudsen teaches the primary key index table at Fig. 27, element 502, which contains the pointers, which is the database block address of the primary B+tree 507.

Regarding claim 5, applicant argued that Knudsen does not teach "a primary B+tree comprising mapping table row identifiers, each mapping table row identifier stored in a row of the primary B+tree, the mapping table row identifiers comprising a physical row identifier of a corresponding mapping table row". On the contrary, Knudsen teaches a primary B+tree at Fig. 27, element 507, wherein the primary B+tree comprises pointers to linked data pages 510. Fig. 28 shows structure of the page, which includes row data information. The pointers from the B+tree to the linked data pages is therefore corresponding to the mapping table row identifier as claimed.

Regarding claim 6, applicant argued that Knudsen does not teach: "mapping table row identifiers are stored at a fixed offset from a beginning of each row of the primary B+tree". On the contrary, Knudsen teaches the page pointers 522 and 523 at Fig. 28, which are stored at a fixed offset in the 32-Byte header 520, at the beginning of the row data area 531.

Regarding claim 7, applicant argued that Knudsen does not teach: "an auxiliary structure for a primary B+tree comprising row identifiers of corresponding mapping table rows, the row identifiers referring to a primary B+tree row". On the contrary , Knudsen teach a "secondary key index" 508 and "B+tree on secondary key" 509, wherein the

B+tree on secondary key 509 contains pointers to the same linked data pages as the B+tree on primary key 507.

Regarding claim 8, applicant argued that Knudsen does not teach the mapping table and the guess-DBA. On the contrary, On the contrary, at Fig. 27, Knudsen teaches a "primary key index" table (element 502), wherein each row of the primary key index comprises a primary key and a pointer to a "B+tree on primary key", and therefore provide the mapping between the primary key index table and the B+ tree.

In light of the foregoing arguments, the 35 U.S.C 102 rejection is hereby sustained.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (703) 308-7299. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Khanh B. Pham
Examiner
Art Unit 2177

KBP
April 14, 2004

SRIRAMA CHANNAVAJJALA
PRIMARY EXAMINER